A STUDY TO ASSESS THE EFFECTIVENESS OF MUSCLE STRETCHING EXERCISES ON PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA AMONG B.Sc NURSING STUDENTS IN KMCH COLLEGE OF NURSING, COIMBATORE.

Reg. No:301220455

A DISSERTATION SUBMITTED TO THE TAMILNADU

Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN

PARTIAL FULFILLMENT OF REQUIREMENT

FOR THE DEGREE OF MASTER OF

SCIENCE IN NURSING

APRIL - 2014

CERTIFICATE

This is to certify that the Dissertation entitled **"A STUDY TO ASSESS THE EFFECTIVENESS OF MUSCLE STRETCHING EXERCISES ON PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA AMONG B.SC NURSING STUDENTS IN KMCH COLLEGE OF NURSING AT COIMBATORE"**, is submitted to the faculty of Nursing, **The Tamilnadu Dr. M.G.R. Medical University, Chennai Reg.No: 301220455** in partial fulfillment of requirement for the degree of Master Of Science in Nursing. It is the bonafide work done by her and the conclusions are her own. It is further certified that this dissertation or any part of thereof has not formed the basis for award of any degree, diploma or similar titles.

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LIST OF ABBREVIATIONS

SL:NO	ABBREVATION	EXPANSION
1	PCOD	Polycystic Ovarian Diseases
2	HPO	Hypothalamic-Pituitary-Ovarian
3	LH	Luteinizing Hormone
4	FSH	Follicular Stimulating Hormone
5	BMI	Body Mass Index
6	VAS	Visual Analogue Scale
7	MDQ	Menstrual Distress Questionnaire
8	TENS	Transcutaneous Electrical Nerve Stimulation
9	SMT	Spinal Manipulative Therapy
10	MMDQS	Moos Menstrual Distress Questionnaire

CHAPTER - I

INTRODUCTION

“When she bleeds the smells I know change colour.

There is iron in her soul on those days. She smells like a gun” (Jeanette)

Menstruation is the periodic and cyclic discharge of blood, mucus and cellular debris from the uterus, which is mainly because of periodic progesterone withdrawal after ovulation in no fertile cycles. It is initiated in response to change in the hormonal production from the ovaries and these ovaries are controlled by the pituitary and hypothalamus. **(Sheth, 2011).**

One menstrual cycle is usually lasts about 27- 29 days and this time period is measured from the first day of one period to the first day of next menstruation. The duration of bleeding is about three to five days and estimated blood loss is between 50 and 200ml.The regular cycle of twenty – eight day’s seen only in a small proportion of women. A deviation of two or three days from the 28 days rhythm is quite common. The menstrual rhythm depends on the hypothalamus – pituitary ovarian action but the amount of blood loss mainly depends upon the severity of uterine contraction. **(Padubidri et al., 2009).**

Menstruation is brought about by the fall in the levels of estrogen and progesterone following the degeneration of the corpus luteum. In anovulatory cycles, fall in the level of estrogen alone can bring about withdrawal bleeding in the form of menstruation. However the estrogen withdrawal bleeding is far heavier-than the progesterone withdrawal bleeding.

Menstruation is the end point of events which begin in the cerebral cortex and hypothalamus and ends at the uterus in the hypothalamic – pituitary – ovarian – uterine axis. Any break in the axis creates menstrual problems. **(Daftary et al., 2008).**

During the first two years after menarche most cycles are anovulatory. The transition from anovulatory to ovulatory cycles results from maturation of HPO axis characterized by positive feedback mechanisms in which rising estrogen level triggers a surge of LH hormones and ovulation.

Menarche is a hallmark of female pubertal development. It usually occurs between the ages of 10 – 14 years. In some places menstruation is still considered as dirty thing and the women also considered dirty during menstruation. But menstruation is a normal physiological process.

Dysmenorrhoea is pain with menstruation usually cramping in nature and centered in the lower abdomen. The term dysmenorrhoea is derived from a Greek word: Dys – difficulty, menorrhea-monthly flow Dysmenorrhoea literally means painful menstruation. But a more suitable definition for dysmenorrhoea is painful menstruation and it is able to incapacitate day - to – day activities of a woman. **(Dutta, 2010).**

Dysmenorrhoea is one of the commonest gynaecological complaints among women, but the exact incidence is difficult to estimate. Pain is a subjective symptom and cannot be accurately estimated by an outside observer, since different severity and tolerance. It is now estimated that almost fifty percentages of all women experience some degree of dysmenorrhoea while ten percentages are incapacitated by it.

Nausea, vomiting, headache, fatigue, thigh pain, lower headache, diarrhea, nervousness and dizziness may accompany the dysmenorrhoeal cramps. Primary dysmenorrhoea is one where there is no significant and identifiable pelvic pathology. The synonyms of primary dysmenorrhoea are spasmodic dysmenorrhoea, essential dysmenorrhoea, intrinsic dysmenorrhoea and functional dysmenorrhoea. Usually primary dysmenorrhoea seen among younger women up to 25 to 30 years. The time of onset is about two to three years after menarche thus corresponding to the beginning of ovulation. **(Shaw et al., 2000).**

The primary dysmenorrhoeal pain starts a few hours prior or just with the onset of menstruation. The duration of pain usually lasts for few hours may extend to 24 hours but seldom persists beyond 48 hours. The pain is spasmodic and it mainly located in the lower abdomen; sometimes radiate to back and medial aspect of thighs. Systemic discomforts like diarrhoea, giddiness, fatigue, nausea, vomiting, and headache may be present and it may be associated with vasomotor changes like pallor, cold sweats or occasional fainting. Rarely syncope and collapse in severe cases may be associated **(Campell & Monga, 2006).**

Studies have shown that women with primary dysmenorrhoea have an elevated resting uterine tone/pressure. This may be mediated by increased prostaglandin levels or elevated levels of vasopressin.

So many pharmacological and non-pharmacological measures are to relieve pain during menstruation. Therefore the health professional should introduce alternative approaches against the primary dysmenorrhoea. A variety of non – pharmacological measures are used for relaxation and pain relief during menstruation that are breathing exercises, touch and massage, music therapy, heat application, cold application and exercises etc. **(Jeffcoale, 2008).**

Various remedial exercises were advocated for dysmenorrhoea like floor polishing movements, bending, twisting, swaying, and rowing movements and other similar routines. These must be done for at least 15 minutes daily between the periods. These can be done in addition to or instead of various games.

Muscle stretching exercises mean moving the muscles in the different directions from which it normally contracts or work. Stretching can help to gain muscle strength and tone. It also prevents injuries and relives stress. Various types of muscle stretching exercises were advocated to reduce dysmenorrhoea. It was also seen that among athletes the incidence of dysmenorrhoea was lower probably due to anovulatory cycles**. (Tylor, 2011).**

NEED FOR THE STUDY

Dysmenorrhoea is one of the commonest gynaecological problem about 60 percentages of girls and women are suffering from dysmenorrhoea. Primary dysmenorrhoea is a painful menstruation that occurs in the absence of any significant pelvic pathology. It usually develops after first two years of the menarche. The pain is often severe, cramping and crippling so it causes a major disruption of social activities.

Primary dysmenorrhoea is a cyclic process so it adversely affects the women's wellbeing and day to day activities. Over the ages, women with dysmenorrhoea have received only little sympathy and help from others. Physicians and non-physicians do not make more concentration regarding the treatment of primary dysmenorrhoea. **(Thobet al., 2009).**

The overall prevalence of primary dysmenorrhoea is 60 (per cent) in developing countries. The difference between the dysmenorrhoea affected girls in urban areas versus rural areas is not significant, pain is mainly intermittent, commencing with the onset of menstruation, in both rural and urban groups 30 (per cent) with primary dysmenorrhoea did not use any analgesics.

Primary Dysmenorrhoea is one of most common problem among adolescents. The prevalence rate primary dysmenorrhoea is about 60 to 93 (per cent). Primary dysmenorrhoea affects the academic performance, social and sports activities of the girl students. The most common effect of primary dysmenorrhoea on daily routine of students is prolonged resting hours followed by inability to study. The cause of primary dysmenorrhoea is not accurately understood. But the physical activity decreases the levels of inflammatory biomarkers like prostaglandin so it will reduce primary dysmenorrhoea. **(Nag et al.,2013)**

Physical exercise and primary dysmenorrhoea is interrelated with each other, exercise can decrease the symptoms related to the primary dysmenorrhoea like pain, stress, mood changes and finally exercise improve health status also. Women who exercise show less severe primary dysmenorrhoea and greater positive effects than women who are sedentary. (**Choi, 1992).**

The fact that exercises is effective in reducing and treating the symptoms of primary dysmenorrhoea has revealed many years back it. Behavioral interventions such s exercise may not reduce primary dysmenorrhoea, but also decrease the need for pharmacological methods to control menstrual cramps and other associated symptoms.

Exercise today is an important part of normal life of many women. It is proved thing that exercise can make many health benefits for women who exercise regularly. Like exercise improves cardiovascular status, increase bone mineral content, decrease stress and premenstrual syndrome. (**Uzama, 2013**).

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH college of nursing, Coimbatore.

OBJECTIVES OF THE STUDY

1. To identify the prevalence of primary dysmenorrhoea among B.Sc Nursing students.
2. To assess the degree of pain and discomforts during primary dysmenorrhoea among B.Sc Nursing students.
3. To evaluate the effectiveness of muscle stretching exercise on pain and discomforts during primary dysmenorrhoea.
4. To associate the level of pain and discomforts during primary dysmenorrhoea with selected demographic variables.

OPERATIONAL DEFINITIONS

Muscle stretching exercises

It refers the exercises to the abdominal, pelvic, and groin regions which results in increasing blood supply to relieve the pain and discomfort from primary dysmenorrhoea.

Primary dysmenorrhoea

Primary dysmenorrhoea is a painful menstrual cramp without any evident pathology such as PCOD, endometriosis, fibroid uterus. It starts at the onset of menses and lasting about one to three days.

Pain

Pain is spasmodic, cramp like feeling it occurs in the lower region of the abdomen that is just below the umbilicus and this pain will radiate to the back and thigh during menstruation as measured by numerical pain intensity scale.

Discomfort

Refers to the symptoms like fatigue, irritability, headache, giddiness, diarrhoea, nausea, vomiting, and frequency of micturation as measured by primary dysmenorrhoea discomfort rating scale.

HYPOTHESES

H1: There will be significant reduction in the severity of pain during primary dysmenorrhoea after muscle stretching exercises.

H2: There will be significant reduction in discomforts that occurs during primary dysmenorrhoea after muscle stretching exercises.

H3: There will be significant association between pain and discomfort of primary dysmenorrhoea with selected demographic variables.

ASSUMPTIONS

- Pain is subjective to every individual.

CONCEPTUAL FRAME WORK

The model of this study was developed from Titler et al (2004) Effectiveness model. Effectiveness means the benefits of a therapy that are achieved under ordinary circumstance for its participants. In this model participant characteristics are independent variables and the intervening variables are interventions delivered by the investigator to the participant's problem. This model was formulated to test the relationship of these variables for effective outcome.

Effectiveness

Indicates the benefits of muscle stretching exercise on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students

Independent variables

Participant's characteristics such as age, year of B.Sc Nursing programme, age at menarche, Body Mass Index.

Intervening Variables

Muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students. Based on Titler et al (2004) effectiveness model subjects were selected according to their characteristics. The investigator demonstrated muscle stretching exercises to all the participants and observed their return demonstration of muscle stretching exercise for 30 minutes for five days in a week. This observation was carried out for four weeks. The benefits or outcome of muscle stretching exercises were then evaluated by numerical pain scale and primary dysmenorrhoea discomfort rating scale.

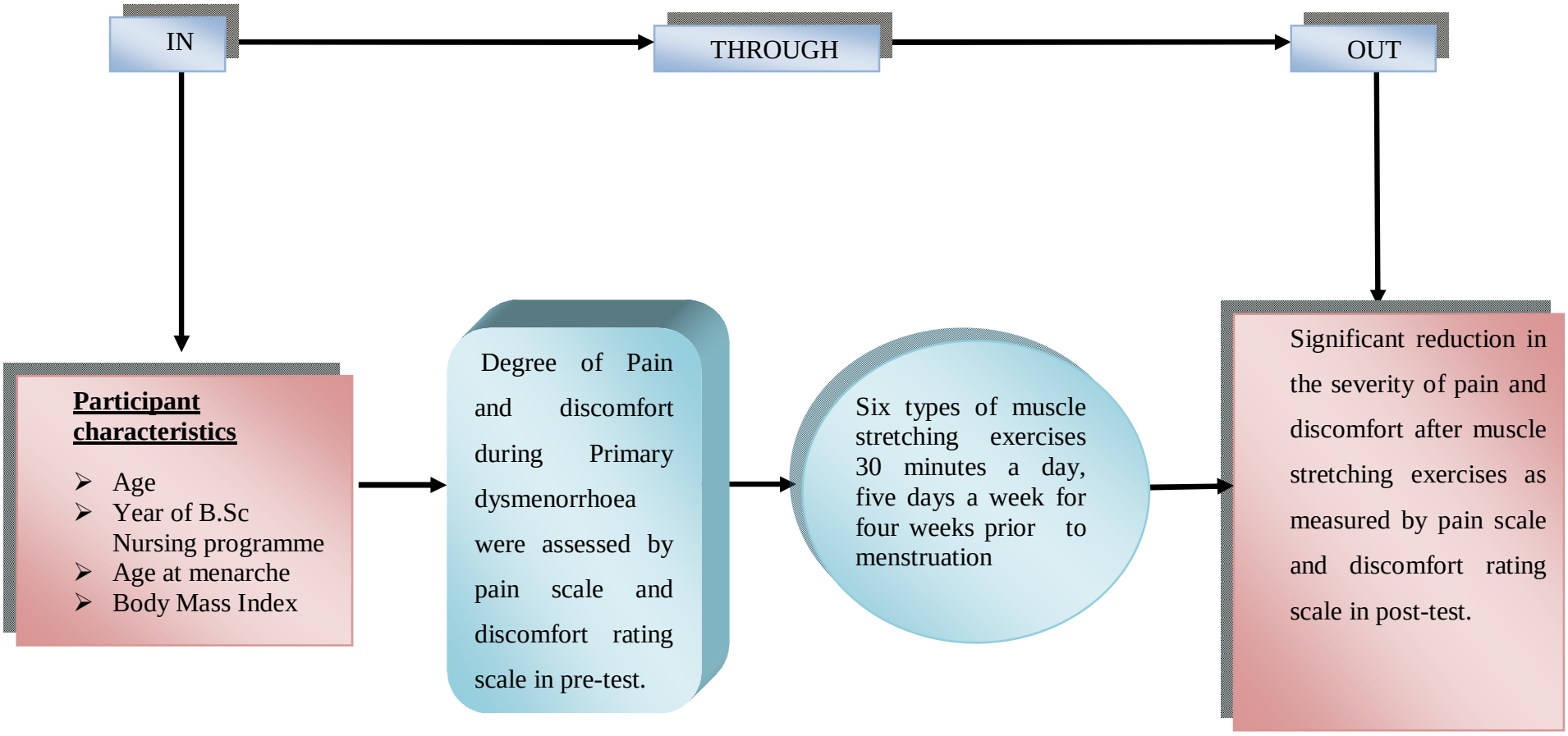


Figure 1: Conceptual Framework Based On Titler et al Effectiveness Model (2004)

CHAPTER-II

REVIEW OF LITERATURE

Review of literature is an important step in the development of any research project. It helps the researcher to analyze what is already known about the topic and to describe methods of inquiry used in earlier work including the success and short comings. This chapter deals with the information collected with relevant to the present study through published and unpublished materials. These publications were the corner stones to carry out the research activities. Research literature were reviewed and organized under the following headings:

- **Literature related to primary dysmenorrhoea.**
- **Literature related to complementary and alternative therapies for the management of primary dysmenorrhoea.**
- **Literature related to effect of exercises on pain and discomfort of primary dysmenorrhoea.**

I.LITERATURE RELATED TO PRIMARY DYSMENORRHOEA

Loto et al., (2012) conducted a study assess first year female adolescents in a Nigerian university (n=49) for primary dysmenorrhoea. The prevalence rate of primary dysmenorrhoea was 53.3(per cent) and most of the students experienced pain at the onset of menstruation. About half of the students explored that pain during menstruation interferes their normal day to day activities. The independent predictors of primary dysmenorrhoea were longer days of menstruation, younger age at menarche and less scores on extraversion scale. Therefore the college health workers must screen routinely for primary dysmenorrhoea among students and offer treatment. As dysmenorrhoea reportedly affects school performance and attendance, more importance must be given to providing health awareness on primary dysmenorrhoea to students.

Gagua et al., (2012) conducted a cross sectional retrospective case control study was to identify risk factors of primary dysmenorrhoea. Setting of the study was capital of Georgia, Tbilisi. A total of 2561 women consented to participate in the research. Among that about 431 participants were included in this case control study. This study was conducted with two stage

cluster sampling. The study aimed to determine the prevalence of dysmenorrhoea in female adolescents from Tbilisi, Georgia, find risk factors and establish an association, if any with sleep nutrition and hygiene. The prevalence of primary dysmenorrhoea was 52.07(per cent) due to pain 69.78(per cent) frequent school absenteeism. The study is concluded by primary dysmenorrhoea is a common problem in the adolescent population of Tbilisi George. It adversely affects their educational performance.

Harlow & Park (2012) conducted one year prospective menstrual diary study. Objective of the study was to describe how menstrual cramps vary from cycle to cycle within woman overtime. To examine the influence of weight and life style factors on occurrence, duration and severity of pain during primary dysmenorrhoea. The participants of study were 165 women aged 17 to 19 years entering a local university in 1985. Setting of the study was college of Women Meekyong Park. This study is concluded by healthy life style and less use of alcohol is the best treatment for primary dysmenorrhoea.

Ohde et al., (2012) conducted a prospective cohort study to determine the epidemiology of primary dysmenorrhoea in Japanese women of menstrual age. Study was conducted by using health diary in a sample representation of Japanese women. Information of health care use was also collected. The sample size was 823. The data were collected by menstrual distress scale and numerical pain scale. And this is concluded by primary dysmenorrhoea is common health problem in Japanese women. Primary dysmenorrhoea is significantly associated with younger age and employment status.

Okora et al., (2012) conducted a descriptive cross – sectional study conducted to evaluate the participants self – reported knowledge of dysmenorrhoea types and symptoms and to identify its severity factors that make pains worse and its negative academic impacts among a group of female university Maiduguri, located at Bama road. Non probability convenient random selected 289 participants were interviewed using a self – administered pre-tested structured, mostly closed ended questionnaire. This study is conducted by outstanding high number of these female students did not know the type of dysmenorrhoea impacts negatively on their academic performance which may be as a result of inadequate management among the studied participants.

Parker et al., (2011) conducted a data based quantitative survey to establish the typical experience of menstruation and determine the prevalence rate of primary

dysmenorrhoea. It was a cross sectional study, setting of the study was senior high school in the Australian Capital Territory (Australia).Sample size was 1051. The data collection was done by the menstrual disorder of teenager's questionnaire. Highly significant associations found between increasing severity of menstrual pain, number of menstrual related discomforts with life activities and school absence. The study concluded, the pain and discomforts during primary dysmenorrhoea interferes the life activities of adolescents.

Unsal et al., (2010) conducted a cross sectional study to assess the prevalence of primary dysmenorrhoea and detect primary dysmenorrhoea's effect on health – related quality of life among female university students. This study was conducted in Dumlupinar University, Health High School Western Turkey. The sample size was 623 students who agreed to participate in the research. The severity of primary dysmenorrhoea was checked with a visual analog scale. Chi – square test, t – test, regression and ANOVA were used for statistical analyses. This study concluded by primary dysmenorrhoea is a common health problem, and it leads to many negative effects on the health related quality of life among female university students.

Patel et al., (2006) conducted a cross sectional survey, to describe the prevalence and determinants of primary dysmenorrhoea, primary dysmenorrhoea is one of the common menstrual complaints in India. The setting of the study was catchment area of PHC Goa, India. The population of the study was 3000; women aged 18 – 45 years randomly selected. Among that about 2494 women consented to participate. The data was collected by standardized questions regarding discomforts of primary dysmenorrhoea over the past 12 months, baseline demographic data, reproductive risk factors and psychosocial factors. Vaginal and urine specimens were collected for the detecting the reproductive tract problems. This study is concluded by the burden of primary dysmenorrhoea is greater than any other gynecological complaint and is associated with the significant impact on the normal daily life of adolescents. Social disadvantage of primary dysmenorrhoea are co-morbidity with the somatic syndromes and reproductive factors were determinants of this complaint.

Chen et al.,(2006)conducted a study to explore teenage girls self –care strategies for primary dysmenorrhoea, conducted four focus groups in Kaohsinung, Taiwan with 23 female adolescents with primary dysmenorrhoea. Thematic content analysis was used to explore and organize the data. The self – care strategies for primary dysmenorrhoea reported by

participants included reducing physical activities and modifying the diet by using herbal remedies or medication. Data was analyzed in cultural contexts. Knowledge of healthy food habits or herbal health practices can strengthen professionals to counsel this population more.

Wang et al., (2004) conducted a population based cohort study among Chinese women. Here the independent effect women's perceived stress in the preceding menstrual cycle on the prevalence of primary dysmenorrhoea in the subsequent cycle was assessed from cause to effect. The setting of the study was textile Mill in Angling City, Anhui Province, China. The sample size was 388.The data collection tool were questionnaires for stress and primary dysmenorrhoea. The risk of primary dysmenorrhoea was more than twice with low stress in the preceding cycle. So this study discovered a significant association between incidence of primary dysmenorrhoea and the stress.

II.LITERATURE RELATED TO ALTERNATIVE AND COMPLEMENTARY THERAPIES FOR THE MANAGEMENT OF PRIMARY DYSMENORRHOEA.

Marzouk et al., (2013) conducted a study with randomized blind clinical trial of cross over design, to determine the effect of aroma therapy and abdominal massage on menstrual pain during primary dysmenorrhoea among nursing students. The setting of the study was in the nursing department at Mansoura University in Egypt. The sample size was 100 and sampling technique was purposive sampling technique. In the first treatment phase group one (n=46) received aromatherapy and abdominal massage one time daily for seven days before the menstruation using essential oil. Group two received the same intervention but the placebo oil. In the second group the two groups switched to alternative regimen. These results suggested that aromatherapy is effective in alleviating menstrual pain, its duration and excessive menstrual bleeding.

Yeh et al., (2013) conducted a study to investigate the effect of auricular acupressure (AA) alone and combined interactive acupressure (AA) alone and combined interactive internet – based intervention for the management of pain during menstruation and self care of female adolescents with primary dysmenorrhoea. The setting of the study was national Taipei University of Nursing and health sciences. The study design was a pretest/posttest control design. The sample size was 107 .The sampling technique was purposive sampling technique.

The outcomes were collected by short – form Mc Gill pain questionnaire, Menstrual Distress Questionnaire (MDQ), and Visual Analogue Scale (VAS).This study concluded that the Auricular Acupressure alone and a combination of auricular acupressure and interactive internet was effective in reducing menstrual pain and distress from primary dysmenorrhoea.

Jenabi, (2013) conducted a clinical trial at Toyserkan Azad University in western Iran from July 10 to September 5/2010 to assess the effectiveness of ginger on pain and discomfort of primary dysmenorrhoea. The sample size was 70 female university students with primary dysmenorrhoea. The subjects were randomly divided into two equal groups and were given either placebo or ginger in capsule form for first three days of menstrual cycle. Severity of pain was graded by Visual –Analogue scale. A Likert Scale was used to find out response to treatment .Wilicoxon's rank-sum was used to compare the severity of pain in the two groups.29 subjects reported an improvement in primary dysmenorrhoea symptoms like nausea, vomiting, diarrhoea compared with 16 in placebo groups. So this study concluded that ginger is effective in minimizing the pain severity of primary dysmenorrhoea.

Proctor et al., (2012) conducted a study to find out the effect of high-frequency transcutaneous electrical nerve stimulation (TENS) on primary dysmenorrhoea. The setting of the study was Glassgow; Scottland.22 women were randomly selected for participating into the two month experiment by using TENS or sham TENS. The pain and symptoms of primary dysmenorrhoea were measured by self reported pain intensity scale, and questionnaire related to primary dysmenorrhoea symptoms. Pain severity in TENS is significantly reduced than in placebo group (p=0.018).This study concluded, the TENS is effective in reducing pain and discomfort during primary dysmenorrhoea.

Gharloghi et al., (2012) conducted a cross over clinical trial to find out the effect of acupressure on severity of primary dysmenorrhoea. Setting of the study was Sarpolezahab Health Center. The sample included 50 females aged 18 – 30 years old. Subjects were randomly assigned to control and experimental groups and then evaluated their three menstrual cycles. The tools were McGill pain scale and verbal multi dimensional scoring system. The findings of the study showed the severity of primary dysmenorrhoea pain decreases significantly for up to 2 hours after intervention with acupressure at the SP6 and SP8 points ($P < 0.001$). So the study concluded acupressure on the SP6 and SP8 points was effective to reduce the pain during primary dysmenorrhoea.

Mirabe et al., (2011) conducted a randomized control trial to determine the effect of the herb on the severity of primary dysmenorrheal symptoms. The setting of the study was Zanjan Islamic Azand University Students. The sample size was 100 students who were matched for already formulated inclusion criteria. The participants were randomly divided into two experimental (49) and control (51) groups. The experimental group took 255 mg capsules of the herb, three times a day at the onset of menses while the controls similarly took placebo. Pain severity was evaluated by a visual analogue scale. The pain was reduce after intervention ($p<0.01$) .So this study concluded Valeriana Officinalis decrease primary dysmenorrhoea symptoms.

Nag et al., (2009) conducted a randomized trial to evaluate the efficacy of yoga as alternative for primary dysmenorrhoea and stress in medical students. The setting of the study was Dr.Pinnamaneni Sidharath Institute of Medical Science. The sample size included 113 students who fulfilled the fixed criteria, sixty subjects were selected by simple random sampling method and were allotted to the study group ($n=60$) for yoga intervention and remaining 53 were included in the control group. Semi structured questionnaire, the numerical rating scale were administered for data collection. Significant ($p<0.0001$) reduction in the perceived pain and significant improvement in perceived stress ($p<0.0001$).So this study was concluded that with yoga had a significant effect on stress and pain from primary dysmenorrhoea.

Witt et al., (2009) conducted a prospective observational study with two years follow-up to evaluating the effect of homeopathic treatment on patients with primary dysmenorrhoea. The setting of the study was in Germany and in Switzerland. The sample size was 128 women; they were treated by 57 physicians. Standardized questionnaires were used to record 2 years diseases, quality of life, medical history, consultations, all treatments and other health services. The patients were included consecutively upon their consultation with participating physician. The statistical analysis was done by SAS/STAT software and this study concluded with the patients with primary dysmenorrhoea improved under homeopathic treatment.

Hondras et al., (2008) conducted a randomized, observer blinded; clinical trial assessed the efficacy of spinal manipulative therapy (SMT) in the treatment of women with primary dysmenorrhoea. The setting of the study was Chicago Metropolitan Area. The sample

size was 138 women ages 18 – 45, were randomly assigned to either SMT or low - force mimic maneuver. The sampling technique was purposive sampling technique. The main outcome measures were Visual Analog Scale (VAS) and Menstrual Distress Questionnaire (MDQ).This study is concluded by the spinal manipulative therapy had a significant effect on pain and discomfort from primary dysmenorrhoea.

Witt et al., (2007) conducted a randomized controlled trial with non randomized cohort, to assess the clinical effectiveness and cost – effectiveness of acupuncture in subjects with primary dysmenorrhoea. The setting of the study was Charity University Medical Center. The sample size was 50. Patients with primary dysmenorrhoea was randomly assigned to acupuncture experimental group (15 sessions over 3 months) or to control group (no acupuncture).The tool for assessing pain was verbal descriptive pain scale. This study concluded that the patient with primary dysmenorrhoea was associated with improvements in pain and quality of life (P<.001) after acupuncture application.

Connel et al., (2006) conducted a cross-sectional study to describe both non-pharmacological and pharmacological treatments used by adolescents with primary dysmenorrhoea. Setting of the study was urban academic medical center. Participants were healthy adolescents age 19 years 20 younger (n=76) with moderate to severe primary dysmenorrhoea were included. Sampling technique was purposive sampling technique. The data were collected by Moos Menstrual distress questionnaire and 0 -10 point pain rating scale to estimate pain severity. This study is concluded by adolescent with moderate and severe primary dysmenorrhoea reported high morbidity. Girls used numerous non – pharmacological remedies as well as medications for pain but infrequently assessed formal medical care.

III.LITERATUE RELATED TO EFFECT OF EXERCIES ON PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA

Chaudhuri et al.,(2013) conducted a cross sectional study, to assess the prevalence of primary dysmenorrhoea among school girls and to compare the impact of exercise and hot water bottle application on the occurrence and severity of primary dysmenorrhoea among the study population. The study design was randomized controlled trial, group randomization of

the two schools was done into two intervention groups (exercise and hot water bottle groups) 53 girls in school one and 75 girls in school two participated in the intervention .The sampling technique was random sampling technique. The tools were menstrual distress questionnaire, visual analogue scale for pain. The analysis was done by t-test. Finally this study was concluded by both hot water bottle and exercise can be used in primary dysmenorrheal girls in home setting to provide relief from pain and menstrual distress.

Abbaspour et al., (2012) conducted a randomized clinical trial to determine the effect of exercise on primary dysmenorrhoea in high school girls. The setting of the study was Azad University ofiran. The sample size was 150 students. Sampling technique was simple random sampling. McGills menstrual discomfort scales were used to collect the data. This study tells the exercise decrease duration and severity of primary dysmenorrhoea ($P<0.01$).

Shahr-Jerdy et al., (2012) conducted a quasi – experimental design to evaluate the effect of stretching exercises on primary dysmenorrhoea in adolescent girls. Setting of the study was six secondary schools in the 2011-2012 scholastic years in Arak, in the central Iran. The sample size was 179 students aged in 15-17years.The sample were divided by simple randomization into experimental group (n=124) and control group (n=55).The data collection tool were requested to perform the active muscle stretching exercises for 8weeks at home. This study concluded that muscle stretching exercise are effective in reducing pain intensity, pain duration of girls with primary dysmenorrhoea ($P<0.001$).

Gangane ,(2011) conducted a randomized clinical trial, to evaluate and to compare the effectiveness of golub's exercises and aerobic exercises in primary dysmenorrhoea. Setting of the study was high schools in Belgaum city. Sample size was 160 high school girls suffering from primary dysmenorrhoea were randomly assigned to Group A (aerobic exercises) and Group B (Golub's exercises).The outcomes measured by Moos Menstrual Distress Questionnaire(MMDQS).Highly significant improvements in terms of pain relief on VAS and reduction of symptoms of MMDQ were observed in both Group A and B($P<0.0001$).In addition results also support that aerobic exercises showed better reduction in pain and symptom of primary dysmenorrhoea.

Maharash et al., (2011) conducted an experimental study to evaluate the effect of physical activity on primary dysmenorrhoea of female university students. The setting of the

study was Islamic Azad University-Koraj Branch. The sample size was 50 students and randomly were divided into experimental (n=25) and control (n=25) groups. The experimental group participated in physical activity programme for 8 weeks, 3 sessions a week and 90 minutes per session. The data was collected by numerical pain scale and Moos Menstrual Distress Scale

Hightower, (2008) conducted a prospective daily reporting, this study checked the relationship between exercise participation and menstrual pain, physical symptoms, and negative mood.21 sedentary women and 20 women who participated in regular exercise completed a modified version of the Prospective Record of the Impact and Severity of Menstrual Symptoms(PRISM)calendar for two complete menstrual cycles. Analyses revealed that pain was greater in all women during menses compared to the follicular and luteal phses. Moreover, exercise status was found to interact with menstrual cycle phase in predicting pain. Especially exercise participants reported less pain than sedentary women during menses, though there was no difference between the two groups during the follicular and luteal phases. Exercise status was also related with greater reports of anxiety during menstruation. Otherwise, exercise status not observed to influence reports of symptoms or negative mood throughout the menstrual cycle. These results suggest that participation in even moderate amounts of exercise affects the experience of menstrual pain in women. ($P<0.001$)

Abhaspour et al., (2004) conducted a randomized clinical trial. The setting of the study was high school adolescent girls in Masged Solayman City. The sample size was 150 and sampling technique was convenient sampling technique. Students were divided in two exercise that is experimental and non exercise that is control groups. After that exercise group was given different types of exercises and then results of the two groups were registered after the exercise programme. The Repeated measure design and descriptive statistics were, used for analyzing the collected informations. The result showed that the severity of the pain in the exercise group reduced ($p<0.01$). So the study shows the exercise can decrease the duration and severity of primary dysmenorrhoea and also using the sedative tablets in high school girls.

Aganoff & Boyle (1994) conducted a true experimental research in that checked the effects of regular, moderate exercise on mood states and discomforts of dysmenorrhoea. The setting of the study was Bond University Australia. The sample size was 256.A group of

female regular exercise (N=97) and a second group of female non-exercise (159).The sampling technique was random sampling technique. The data collection tools were Menstrual Distress Questionnaire (MDQ).Multivariate analyses of covariance (MANCOVAS) revealed significant affects for exercise on negative mood states and discomforts of primary dysmenorrhoea.

CHAPTER – III

RESEARCH METHODOLOGY

The present study evaluate the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH college of nursing, Coimbatore.

RESEARCH DESIGN

The Pre – Experimental research design, one group pretest and post test design was adopted for this study.

VARIABLES UNDER THE STUDY

Independent variable:

Independent variable was muscle stretching exercises.

Dependent variable:

Dependent variable was pain and discomfort during the primary dysmenorrhoea.

SETTING OF THE STUDY

This study was conducted in KMCH College of Nursing, Coimbatore for B.Sc Nursing students

The student strength in B.Sc Nursing during primary dysmenorrhoea screening test was:

First year B.Sc Nursing - 91

Second year B.Sc Nursing - 92

Third year B.Sc Nursing - 81

Fourth year B.Sc Nursing - 87

Therefore total B.Sc Nursing students during the time primary dysmenorrhoea screening test was - **351**

POPULATION

All B.Sc Nursing students in KMCH College of nursing, Coimbatore who were screened to have primary dysmenorrhoea.

SAMPLE SIZE

The total sample size was 50

SAMPLING TECHNIQUE

Non probability purposive sampling technique was adopted for the selection of sample.

CRITERIA FOR SELECTION OF THE SUBJECTS

Inclusion criteria

- ❖ Students with primary dysmenorrhoea and normal, regular menstrual cycle.
- ❖ Those who experienced primary dysmenorrhoea for the last three months with every menstruation.
- ❖ Those who was willing to participate in the study.

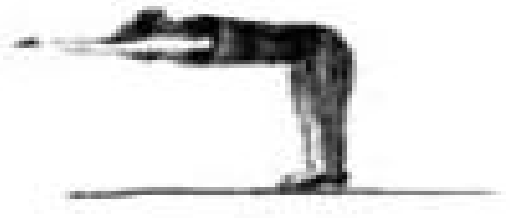
Exclusion criteria

- ❖ Those who had the habit doing regular exercise.
- ❖ Those who had spinal problems.
- ❖ Those who were diagnosed for having secondary dysmenorrhoea.
- ❖ Those who were undergoing treatment for secondary dysmenorrhoea.
- ❖ Those who were taking medications during primary dysmenorrhoea.

DESCRIPTION OF INTERVENTION

In this study included six types of muscle stretching exercises for abdominal, pelvic, and groin regions.

In the first stretching exercise, told the subjects to bend their trunk forward from the hip joint so that the shoulder and back was on a straight line. And the upper body was parallel to the floor. Duration of holding time was 5 seconds; repetition was 20 times.



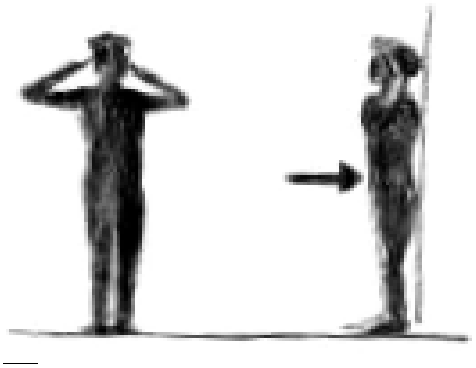
In the second stretching exercise, requested the subjects to raise their one heel from the floor, then repeat the exercise with the other heel alternatively. This exercise needed to perform 20 times.

In the third exercise, requested the subject to spread their feet wider than shoulder width, place trunk and hands in forward stretching mode; after that completely bend the knees for maintaining squatting position. The duration of this position was 5 seconds. Again raised the body and repeated the same movement 20 times.

In the fourth exercise, requested the subject to spread their feet wider than shoulder width. Then told the subject to bend and touch left ankle with their right hand while putting their left hand in a stretched position above the head, so that the head is in the middle and turn the head and look for the left hand. This exercise needed to repeat alternatively for the opposite foot with the same method. The exercise repeated alternatively 20 times for each side of the body.

In the fifth exercise, requested the subject to lie down in supine position after that the shoulders, back, and feet keep on the floor. Next the knees should bent with the help of hand and bring it towards the cheek.

In the sixth exercise, requested the subjects to stand against a wall and put the hands behind the head and elbow pointed forward in the direction of the eyes, then without bending the vertebral column, the abdominal muscle want to contract for 5 seconds. This exercise was repeated by 20 times.



DEVELOPMENT AND DESCRIPTION OF TOOL

The data collection tool were primary dysmenorrhoea screening questionnaire to screen out the subjects with primary dysmenorrhoea from population, baseline data collecting questionnaire for identifying the demographic characteristics of subject, primary dysmenorrhoea discomfort assessing rating scale and standardized numerical pain scale for assessing pain during menstruation. The following source used to develop the tools.

- Review of literature.
- Valuable words from experts.

The tool consisted of

- **TOOL I**: Baseline Data Collecting Questionnaire
- **TOOL II:** Primary dysmenorrhoea screening questionnaire
- **TOOL III**: **Part 1**

Rating scale for assessing the discomforts during primary dysmenorrhoea.

Part 2

Numerical Pain scale for measuring the pain during primary dysmenorrhoea. **(Jensen & Mcfarland 1993)**

TOOL I

To assess the baseline characteristics of subjects consisted of 7 items seeking information about background of subjects. (Age in years, year of study, age at menarche, height, weight, BMI, and LMP.)

TOOL II

Primary dysmenorrhoea screening questionnaire: To screen out the students with primary dysmenorrhoea from total population and this questionnaire consisted of 10 items seeking information about primary dysmenorrhoea. The alternative gave as normal, mild, moderate, and severe and these responses were scored by 0, 1, 2, and 3.

Final scoring of primary dysmenorrhoea screening questionnaire:

	Score
Mild primary dysmenorrhoea:	8-14
Moderate primary dysmenorrhoea:	15-22
Severe primary dysmenorrhoea:	23-30
Does not have primary dysmenorrhoea:	0-7

TOOL III

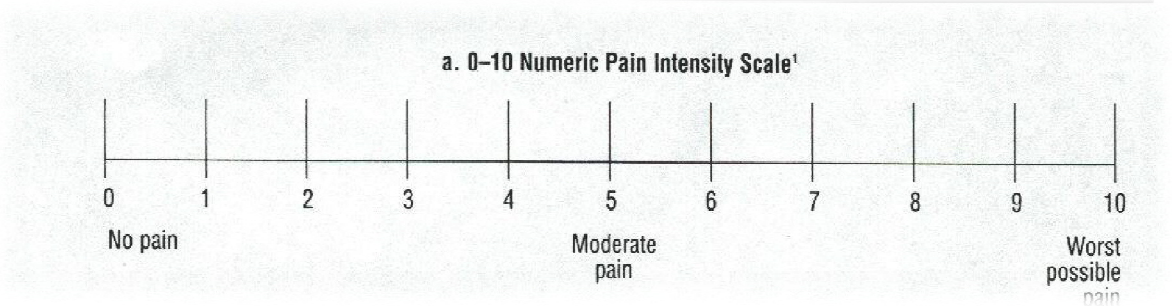
Part 1

Rating scale helps to detect discomforts of primary dysmenorrhoea. The tool consisted of 36 items. The alternative gave as frequently, one to three times, never and these responses were scored by 3, 2, and 1.

Each answer scored based on alternative responses as 3, 2, 1 and the total score was 108.

Part 2

Numerical pain scale: The scale consisted of ranked choices that are no pain, mild pain, moderate pain, severe pain very severe pain and worst possible pain. The pain scale is divided into 10 parts. Each choice was assigned by a corresponding number. The scale was a standardized scale**. (Jensen & Mcfarland 1993)**



TESTING OF THE TOOL

Content validity of the tool:

Content validity of the tool was obtained from nursing and medical subject experts. The tool was given to experts in the field of nursing and medicine. The tool was reconstructed based on the suggestions obtained from the experts.

Reliability of the tool:

Split-half reliability was used to check the reliability of primary dysmenorrhoea discomfort rating scale and score (correlation co-efficient, r = 0.72) shown that the primary dysmenorrhoea discomfort rating scale is reliable in assessing discomfort during menstruation.

PILOT STUDY

Pilot study was conducted among ten students with primary dysmenorrhoea in KMCH College of nursing at Coimbatore and the study was found to feasible.

PROCEDURE FOR DATA COLLECTION

A formal prior permission was obtained from principal, KMCH College of Nursing by submitting a requesting letter and giving assurance to abide by the rules that no personal and professional inconvenience will be created because of the study. Verbal consent from the participants also obtained.

Phase I

In phase I, with the help of primary dysmenorrhoea screening questionnaire screen out the students with primary dysmenorrhoea, then among the students with primary dysmenorrhoea about 50 students with moderate and severe dysmenorrhoea was taken as the subjects into the sample group.

Phase II

Checked the demographic characteristics of subjects with the help of base line data questionnaire, it was the semi – structured questionnaire.

Phase III

Pretest, here assessed the level of pain and discomfort from primary dysmenorrhoea with the help of rating scale and numerical pain scale within the first two days of menstruation.

Phase IV (intervention)

Those students who complete their menstruation allocated for intervention and gave an introduction regarding muscle stretching exercise. After that demonstrated how to do the muscle stretching exercise then requested all the subjects to do the exercise five days per week about 30 min, under the supervision of investigator till the onset of next menstruation.

Phase V

After the four weeks exercise the post test conducted within the first two days of next menstruation.

STATISTICAL ANALYSIS

The data was analyzed using descriptive (mean, percentage) and inferential statistics (chi-square, students‘t’ test) on the basis of objectives of the study.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals the analysis and interpretation of collected data to evaluate the effectiveness of muscle stretching exercise on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH College of nursing, Coimbatore.

The obtained data were classified and analyzed as follows.

Section I: Distribution of subjects according to their demographic characteristics.

Section II: Prevalence of primary dysmenorrhoea among B.Sc Nursing students.

Section III: Description of degree of pain and discomfort during primary dysmenorrhoea before muscle stretching exercise intervention.

Section IV: Comparison of mean pain and discomfort scores during primary dysmenorrhoea before and after muscle stretching exercise intervention.

Section V: Association between the pre-test post-test pain and discomfort scores with selected demographic variables.

SECTION I: DEMOGRAPHIC VARIABLES OF THE STUDENTS

Table 1: Distribution of subjects according to their demographic characteristics

N=50

S. No	Demographic Variables	Frequency(f)	Percentage (Per Cent)
1	**Age In Years**		
	a. up to 20	37	74.00
	b. 21 & above	13	26.00
2	**Year Of Study**		
	a. I year	10	20.00
	b. II year	13	26.00
	c. III year	13	26.00
	d. Iv year	14	28.00
3	**Age At Menarche**		
	a. Up to 13	27	54.00
	b. 14 and above	23	46.00
4	**Body Mass Index**		
	a. Up to 18	13	26.00
	b. 18.1 – 20	20	40.00
	c. 20.1 and above	17	34.00

Table 1: Shows distribution of the demographic variables of 50 B.Sc Nursing students, out of 50 students more than half of the students (74 per cent) were aged 20 and below 20.Regarding year of B.Sc Nursing programme more students were from IV year B.Sc

Nursing (28 per cent).And less students from I year B.Sc Nursing (20 per cent).Among 50 students about 54 percentage of students attained menarche at 13 and below 13 years of old. About 46 percentage of students attained menarche at 14 and above 14 years. On the basis of Body Mass Index about 40 percentage of students, the body mass index were in between 18.1 to 20, 26 percentage of students body mass index were up to 18 and 34 percentage of students were body mass index 20.1 and above.

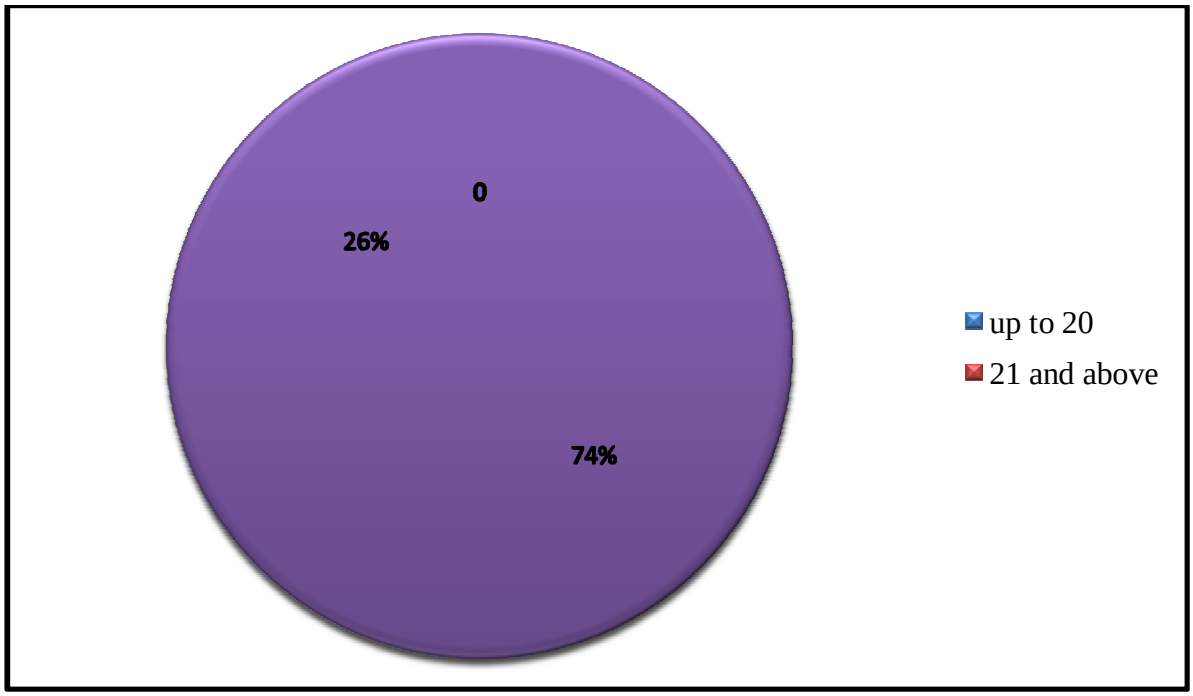


Figure 2: Distribution of subjects according to their age in years.

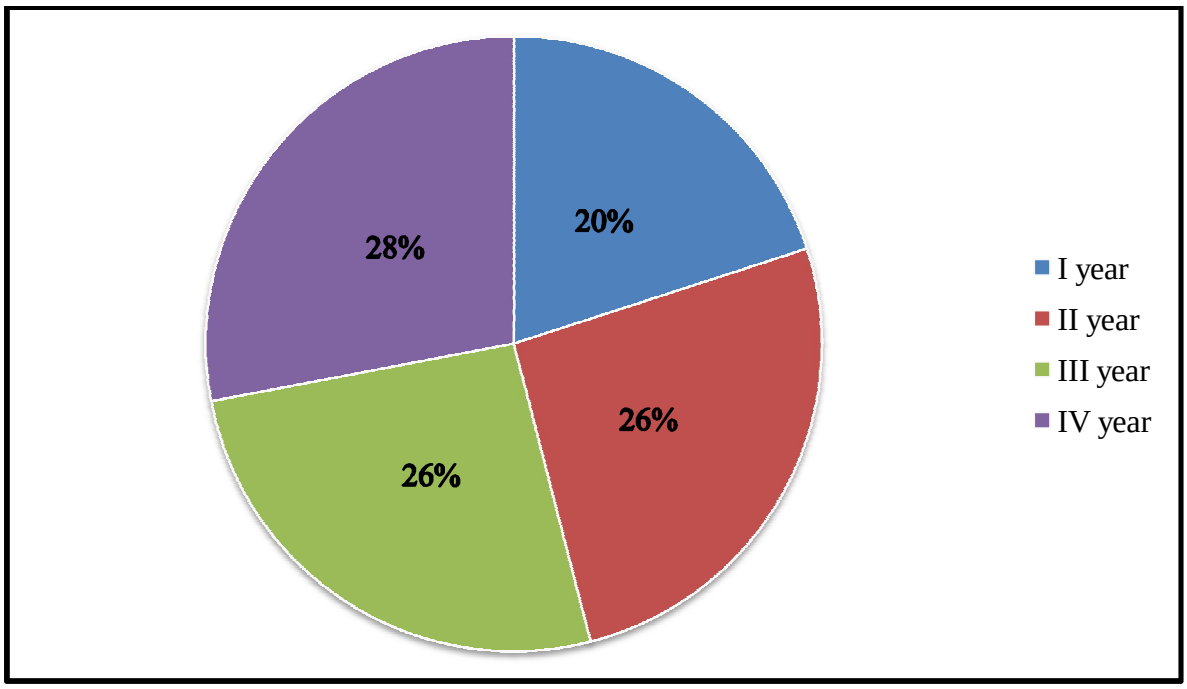


Figure 3: Distribution of subjects according to their year of the B.Sc Nursing programme

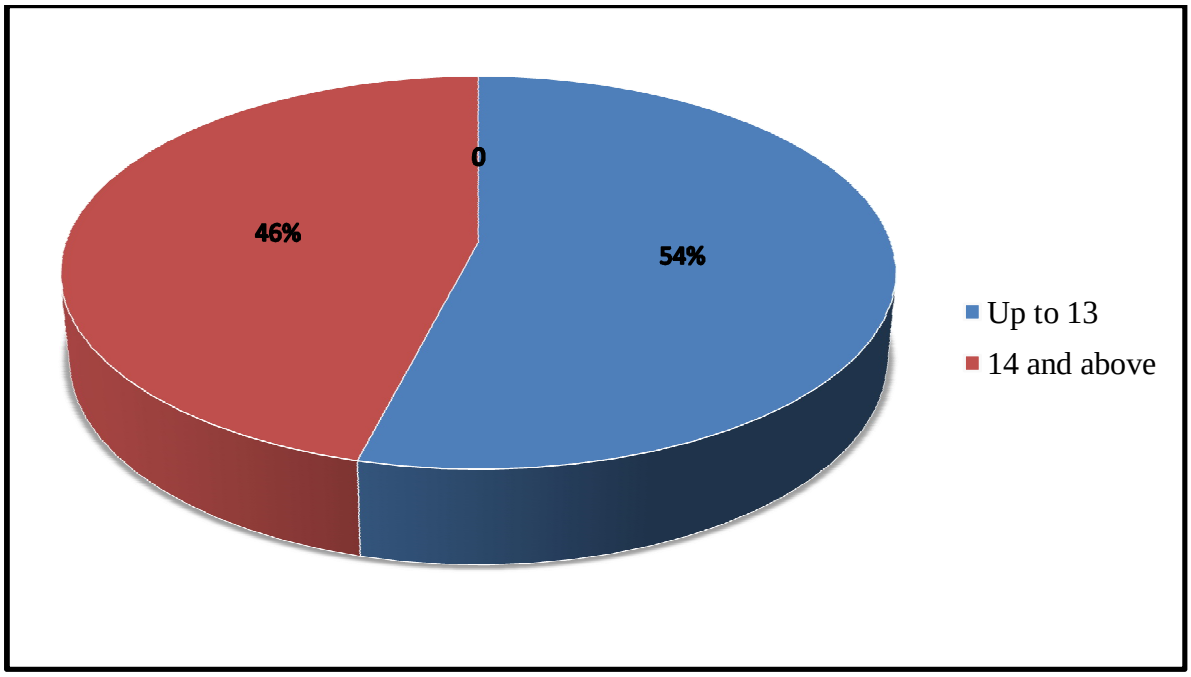


Figure 4: Distribution of subjects according to their age at menarche

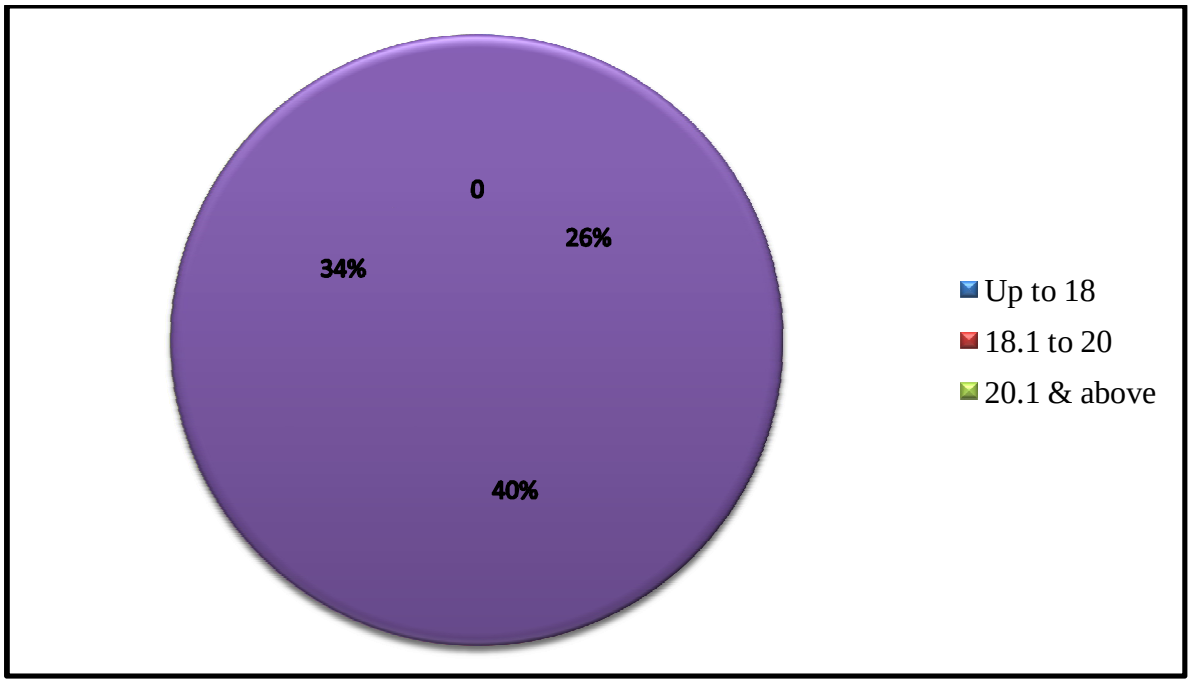


Figure 5: Distribution of subject according to their Body Mass Index

SECTION II: PREVALENCE OF PRIMARY DYSMENORRHOEA AMONG B.Sc NURSING STUDENTS

Table 2: Primary dysmenorrhoea prevalence rate among B.Sc Nursing students

N=351

S. No	Year Of Study	Prevalence Rate (Per cent)	Total Prevalence Rate Of Primary Dysmenorrhoea Among B.Sc Nursing Students
1	I Year	57.14	Therefore the total prevalence rate of primary dysmenorrhoea among all B.Sc Nursing students was **61.25** per cent.
2	II Year	57.17	
3	III Year	72.84	
4	IV Year	64.37	

Table: 2 Shows the prevalence rate of primary dysmenorrhoea was high in III year B.Sc Nursing(72.84 per cent).Total prevalence rate of primary dysmenorrhoea is found to be **61.25** per cent.

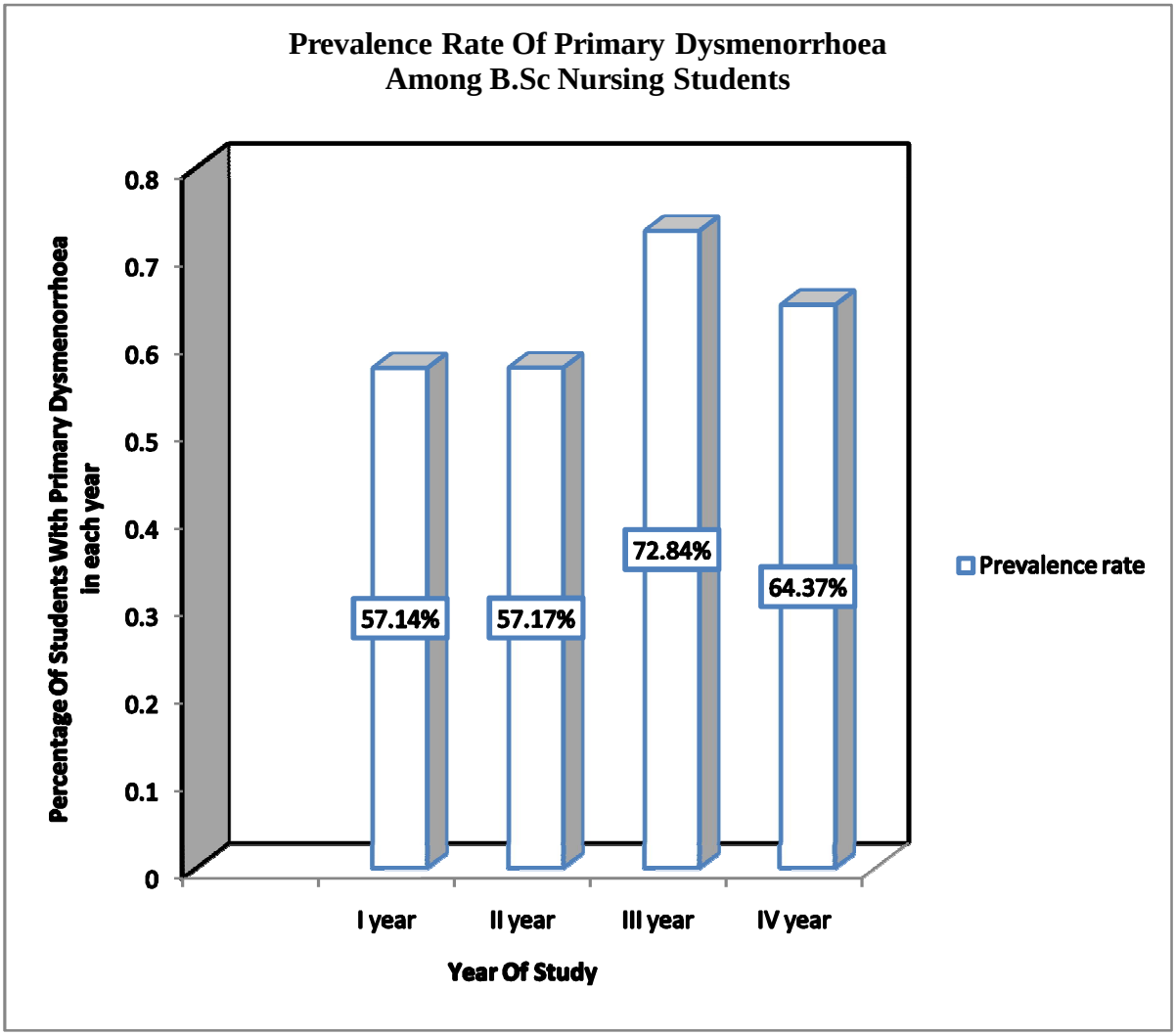


Figure 6: Bar diagram shows the prevalence rate of primary dysmenorrhoea among B.Sc Nursing students.

SECTION III: DESCRIPTION OF DEGREE OF PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA AMONG B.SC NURSING STUDENTS

Table 3: The degree of pain during primary dysmenorrhoea among B.Sc Nursing students before intervention (pre-test)

N=50

SI. NO	Degree Of Pain	Frequency (f)	Percentage (Per Cent)
1	Up to 5	20	40.00
2	6 to 7	20	40.00
3	8 & above	10	20.00

Table: 3 shows that out of 50 students about 20 (40 per cent) of students the degree of pain were from 0 to 5, next 20 students (40 per cent) the degree of pain were from 6 to 7 and the remaining 10 students (20 per cent) the degree of pain were 8 and above 8 that means up to 10.

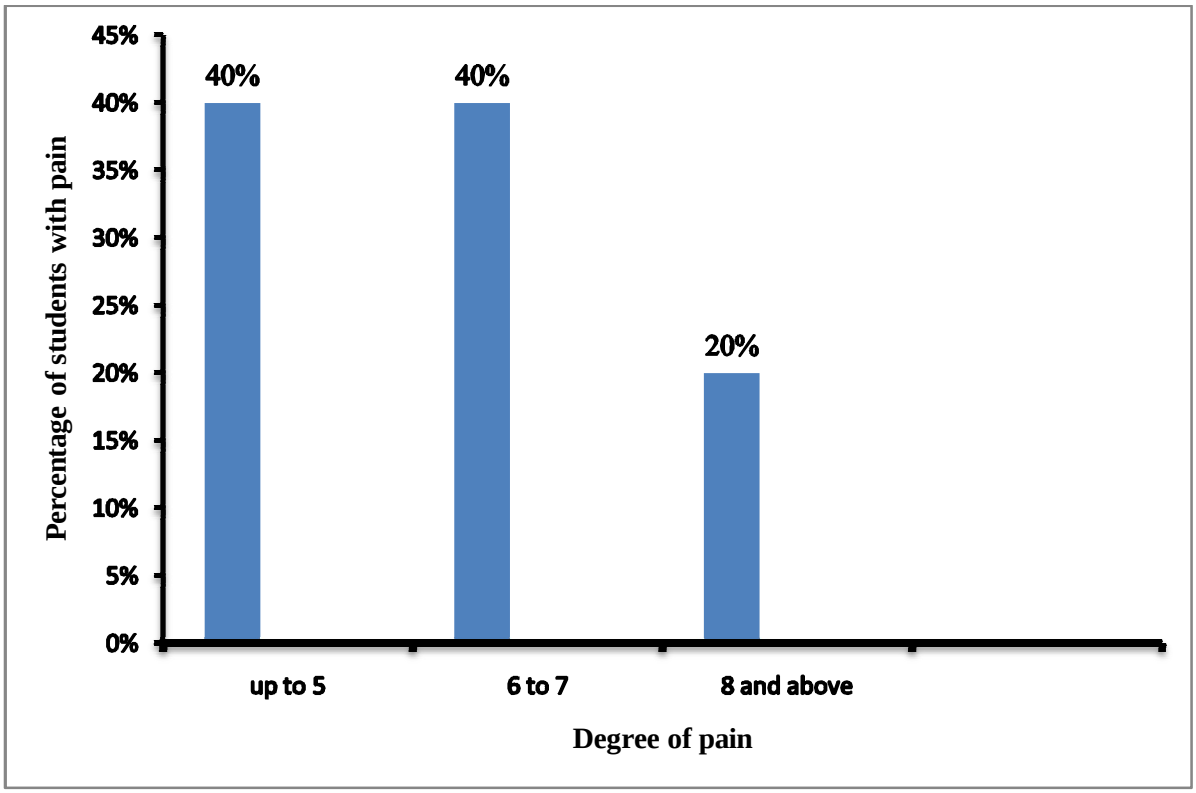


Figure 7: Distribution of subjects according to their degree of primary dysmenorrhoea pain during pre-test.

Table 4: The degree of discomfort during primary dysmenorrhoea among B.Sc Nursing students before intervention (pre-test)

N=50

SI.NO	Degree Of Discomfort	Frequency (f)	Percentage (Per Cent)
1	Up to 60	11	22.00
2	61 to 70	17	34.00
3	71 & above	22	44.00

Table: 4 Shows that among 50 subjects about 11 students (22 per cent) the primary dysmenorrhoea discomfort score ranges from 0 to 60 and 17 subjects (34 per cent) the discomfort scores were from 61 to 70, remaining 22 students (44 per-cent) the discomfort scores were 71 and above 71, that means up to108.

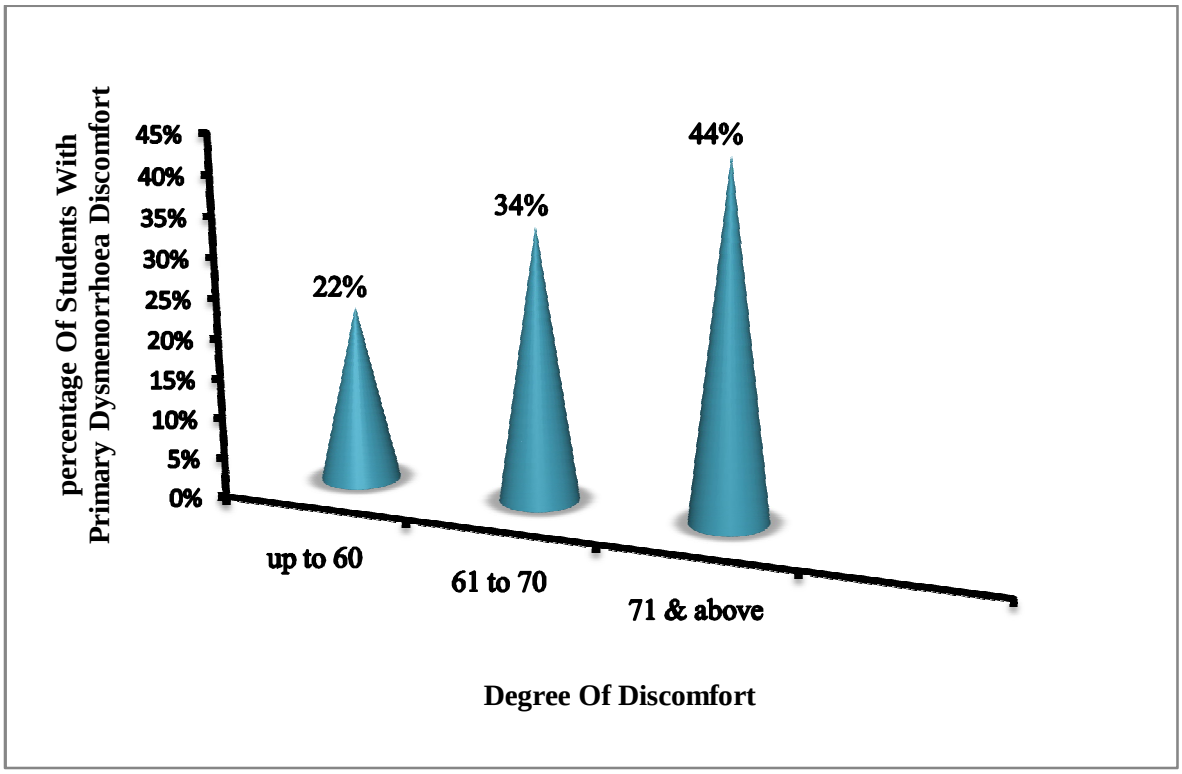


Figure 8: Distribution of subjects according to their primary dysmenorrhoea discomfort score during pre-test.

SECTION IV: COMPARISON OF MEAN PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA SCORES BEFORE AND AFTER MUSCLE STRETCHING EXERCISE.

Table 5 : Comparison of mean pain and discomfort during primary dysmenorrhoea scores before and after muscle stretching exercise.

N=50

Area	Pre-Test		Post-Test		't' Value
	Mean	SD	Mean	SD	
Pain	5.72	1.6	2.18	1.79	16.09*
Discomfort	67.74	10.11	45.54	8	14.08*

't'(49)=2.021,P<0.05 *Significant at 0.05 level

Table: 5 shows that pain score as well as discomfort score of the B.Sc Nursing students were reduced after muscle stretching exercise intervention. The paired't' test show that there is significant difference between the pain score and discomfort score after muscle stretching exercise intervention. Hence null hypothesis is rejected and research hypothesis is accepted. It reveals that muscle stretching exercises were effective in reducing pain and discomfort of primary dysmenorrhoea.

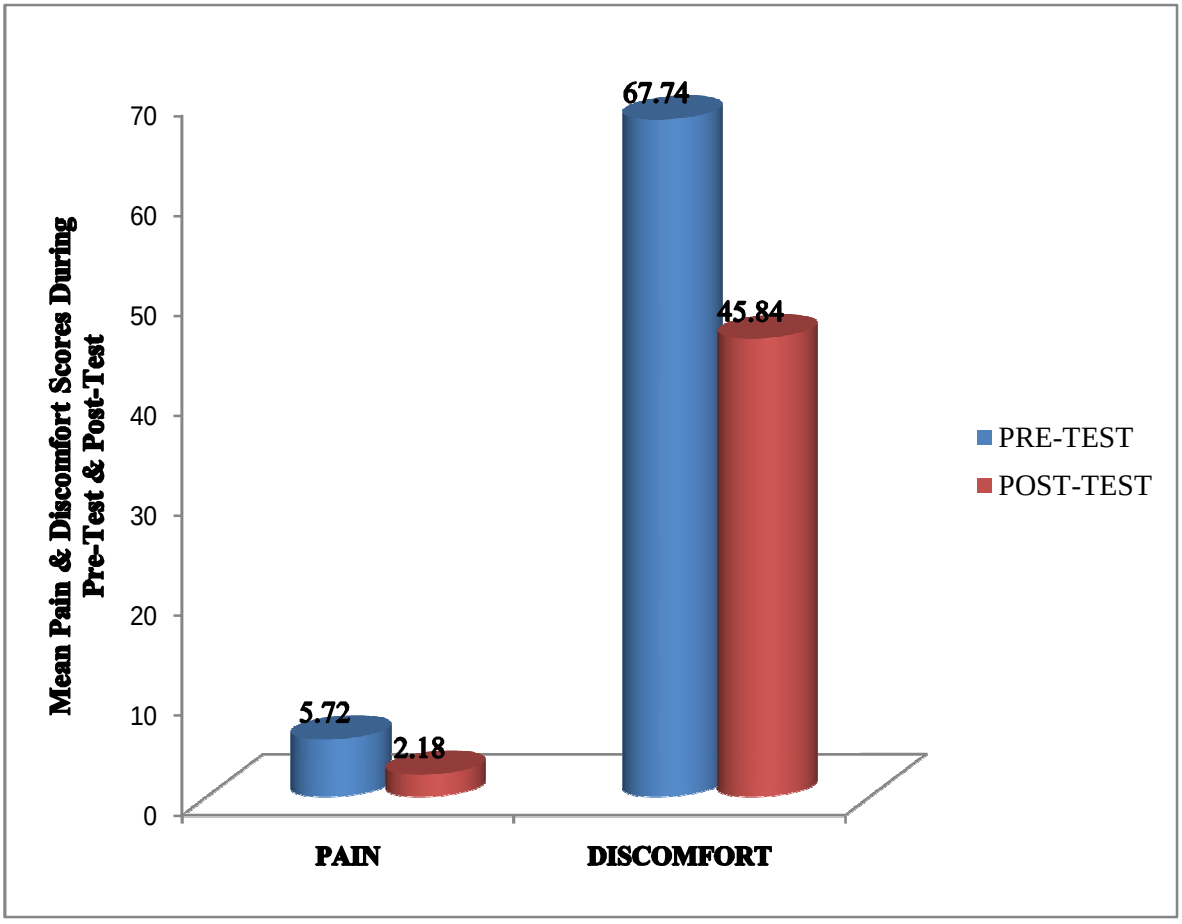


Figure 9: Comparison of mean pain and discomfort of primary dysmenorrhoea scores before and after muscle stretching exercise intervention.

SECTION IV: Association between pre-test post-test pain and discomfort scores of the subject with selected demographic variables.

Table 6: Association between pretest pain score and demographic characteristics of the subject. N=50

SI.No	Variables	Degree of pain			χ^2	df	P value	Inference
		Up to 5	6 to 7	8 and above				
1	**Age In Years**				5.561	2	0.062	**NS**
	Up to 20	12	15	10				
	21 and above	8	5	0				
2	**Year Of Study**				6.703	6	0.349	**NS**
	1st year	4	4	2				
	2nd year	3	6	4				
	3rd year	5	4	4				
	4th year	8	6	0				
3	**Age At Menarche**				1.087	2	0.581	**NS**
	Up to 13	12	9	6				
	14 and above	8	11	4				
4	**Body Mass Index**				0.703	4	0.951	**NS**
	Up to 18	6	5	2				
	18.1 to 20	7	8	5				
	20.1 and above	7	7	3				

NS – Non Significant

Table 6: Shows that in the association of pre-test primary dysmenorrhoea pain score and demographic variables, the chi – square value obtained when associated with age is 5.561 which is not significant at 0.05 level. The chi –square value when compared with year of study is 6.703 which is not significant at 0.05 level. The chi square value obtained when associated with age at menarche is 1.087 which is not significant at 0.05 levels. The chi

square value obtained when associated with Body Mass Index is 0.703.Thus it revealed that there is no association between primary dysmenorrhoea pre-test pain score of the participant and demographic variables like age, year of study, age at menarche, and Body Mass Index.

Table 7: Association between pretest discomfort score and demographic characteristics of the subject N=50

SI.No	Variables	Degree Of Discomfort			χ^2	df	P Value	Inference
		Up to 60	61 to 70	71 and above				
1	**Age In Years**							**NS**
	Up to 20	8	13	16	0.082	2	0.960	
	21 and above	3	4	6				
2	**Year Of Study**							**NS**
	1st year	2	3	5	5.912	6	0.433	
	2nd year	1	7	5				
	3rd year	5	2	6				
	4th year	3	5	6				
3	**Age At Menarche**							**NS**
	Up to 13	5	10	12	0.485	2	0.785	
	14 and above	6	7	10				
4	**Body Mass Index**							**NS**
	Up to 18	4	2	7	7.967	4	0.093	
	18.1 to 20	1	10	9				
	20.1 and above	6	5	6				

NS – Non Significant

Table: 7 Shows that in the association of pre-test primary dysmenorrhoea discomfort score and demographic variables, the chi – square value obtained when associated with age is 0.082 which is not significant at 0.05 level. The chi –square value when compared with year

of study is 5.912 which is not significant at 0.05 level. The chi square value obtained when associated with age at menarche is 0.485 which is not significant at 0.05 levels. The chi square value obtained when associated with Body Mass Index is 7.967. Thus it revealed that there is no association between primary dysmenorrhoea pre-test pain score of the participant and demographic variables like age, year of study, age at menarche, and Body Mass Index.

Table 8: Association between posttest pain score and demographic characteristics of the subject

N=50

SI.No	Variables	Degree Of Pain			χ^2	df	P Value	Inference
		Up to 1	2 to 3	4 and above				
1	**AGE IN YEARS**				2.096	2	0.351	**NS**
	Up to 20	12	17	8				
	21 and above	6	3	4				
2	**YEAR OF STUDY**				5.561	6	0.474	**NS**
	1st year	2	6	2				
	2nd year	6	5	2				
	3rd year	3	5	5				
	4th year	7	4	3				
3	**AGE AT MENARCHE**				0.103	2	0.950	**NS**
	Up to 13	10	11	6				
	14 and above	8	9	6				
4	**BODY MASS INDEX**				1.948	4	0.745	**NS**
	Up to 18	4	7	2				
	18.1 to 20	7	8	5				
	20.1 and above	7	5	5				

NS – Non Significant

Table 8: Shows that in the association of post-test primary dysmenorrhoea pain score and demographic variables, the chi – square value obtained when associated with age is 2.096 which is not significant at 0.05 level. The chi –square value when compared with year of study is 5.561 which is not significant at 0.05 level. The chi square value obtained when associated with age at menarche is 0.103 which is not significant at 0.05 level. The chi square

value obtained when associated with Body Mass Index is 1.948. Thus it revealed that there is no association between primary dysmenorrhoea post-test pain score of the participant and demographic variables like age, year of study, age at menarche, and Body Mass Index.

Table 9: Association between post - test discomfort score and demographic characteristics of the subject

N=50

Sl.No	Variables	Degree Of Discomfort			χ^2	df	P Value	Inference
		Up to 40	41 to 48	49 and above				
1	**Age In Years**				2.319	2	0.314	**NS**
	Up to 20	8	16	13				
	21 and above	5	6	2				
2	**Year Of Study**				7.477	6	0.279	**NS**
	1st year	1	6	3				
	2nd year	3	3	7				
	3rd year	4	6	3				
	4th year	5	7	2				
3	**Age At Menarche**				4.361	2	0.113	**NS**
	Up to 13	7	15	5				
	14 and above	6	7	10				
4	**Body Mass Index**				5.301	4	0.258	**NS**
	Up to 18	4	4	5				
	18.1 to 20	3	9	8				
	20.1 and above	6	9	2				

NS – Non Significant

Table9: Shows that in the association of post-test primary dysmenorrhoea pain score and demographic variables, the chi – square value obtained when associated with age is 2.319 which is not significant at 0.05 level. The chi –square value when compared with year of study is 7.477 which is not significant at 0.05 level. The chi square value obtained when

associated with age at menarche is 4.361 which is not significant at 0.05 level. The chi square value obtained when associated with Body Mass Index is 5.301. Thus it revealed that there is no association between primary dysmenorrhoea post-test pain score of the participant and demographic variables like age, year of study, age at menarche, and Body Mass Index.

CHAPTER-V

DISCUSSION, SUMMARY, CONCLUSION, IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

DISCUSSION

"Dysmenorrhoea" is derived from a Greek word and the meaning of this Greek word is difficult menstrual flow. The two divisions of dysmenorrhoea are primary and secondary. Primary dysmenorrhoea is defined as recurrent, crampy pain occurring with menstruation in the absence of significant pelvic pathology. Primary dysmenorrhoea is caused by myometrial activity resulting in uterine ischemia causing pain. Primary dysmenorrhoea is characterized by a crampy, suprapubic pain and this pain starts several hours before and a few hours after the onset of menstruation. And this pain is characteristically colicky and located in the midline of the lower abdomen but sometimes the pain may extends to lower quadrants, the lumbar area, and the thighs. The associated symptoms of primary dysmenorrhoea are diarrhoea, nausea and vomiting, fatigue, light-headedness, headache, dizziness and, rarely, syncope and fever. Age is a determinant factor of primary dysmenorrhoea, the symptoms being more pronounced in adolescents than in older women **(SOGC-primary dysmenorrhoea consensus guidelines)**

The present study was designed to assess the effectiveness of muscle stretching exercise on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH College of Nursing, Coimbatore. The major findings of the study were analyzed statistically and discussed below based on objectives:

Demographic Description

It is seen that among 50 subjects, regarding the age, most of the subjects were under 20 years of old that means from 17 to 20. In respect of year of study, primary dysmenorrhoea was high in III year B.Sc Nursing students (72.84 per cent).With regard to age at menarche 54 (per cent) attained menarche at and below 13 years and 46 (per cent) attained menarche at 14 years and above. Regarding their Body Mass Index, 40 (per cent) of students were 18.1 to 20 and 34 per cent of students were 20.1 and above.

Agarwal, (2010) conducted an explorative survey technique with a co-relational approach to find out the the prevalence of primary dysmenorrhoea in adolescent girls from the

study he concluded that primary dysmenorrhoea is a very common problem among adolescent girls.

The first objective of the study was to identify the Prevalence of primary dysmenorrhoea among B.Sc Nursing students.

The prevalence rate of primary dysmenorrhoea among B.Sc Nursing students was 61.25 per cent. The prevalence rate of primary dysmenorrhoea was high in third year B.Sc Nursing students (72.84 per cent).

Shah et al., (2013) conducted a cross sectional study at nursing college, situated in campus of largest tertiary care hospital in central and south Gujarat, to find out the prevalence of primary dysmenorrhoea in young females. The sample size was 116. Out of 116 students, 52 (45 per cent) had primary dysmenorrhoea and the peak incidence in between 19 to 21.So the prevalence primary dysmenorrhoea is high in young female population. Such high prevalence makes dysmenorrhoea a significant public health problem among young students that demands some attention from policy makers also.

Nag reported (1982) the incidence rate of primary dysmenorrhoea in India is 60 (per cent).But the true incidence and prevalence of primary dysmenorrhoea are not clearly established in India.

The second objective of the study was to assess the degree of pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students.

The degree of pain during primary dysmenorrhoea was measured by numerical pain scale. The investigator found that out of 50 students about 20 (40 per cent) students the degree of pain was 5 and below 5, next 20 (40 per cent) of students the degree of pain was from 6 to 7 and the last 10 (20 per cent) students the degree of pain was 8 and above 8 that means up to 10.

The degree of discomfort during primary dysmenorrhoea was measured by primary dysmenorrhoea discomfort rating scale. The investigator found that out of 50 students about 11(22 per cent)students the degree of discomfort was 60 and below 60, 17(34 per cent) students the degree of discomfort was from 61 to 70 and 22 (44 per cent)students the degree of discomfort was 71 and above 71 that means up to 108.

Banikarim et al., (1999) conducted a cross sectional research study in that he found among 705 subjects 27(per cent) had mild primary dysmenorrhoea pain, 32 (per cent) had moderate and 41% had severe primary dysmenorrhoea pain. Other discomforts that associated with primary dysmenorrhoea were fatigue (67 per cent), backache (56 per cent), dizziness (28 per cent), vomiting (12 per cent) and headache (58 per cent). Primary dysmenorrhoea is a common cause for severe disruption to the lives of adolescent girls. Therefore the health workers should educate the female girls regarding the treatment options for primary dysmenorrhoea in order to reduce the existing health and college limitations caused by primary dysmenorrhoea.

Al-Kindi and Al-Bulushi revealed in their research 94 (per cent) of the participants had primary dysmenorrhoea. Primary dysmenorrhoea was mild in 21 per cent, moderate in 41(per cent) of subjects, and severe in 32 (per cent) of subjects. Primary dysmenorrhoea resulted in limited sports activities in 81 (per cent), class concentration in 75 (per cent) of subjects, limited homework in 59 (per cent) of cases, College absenteeism in 45 (per cent) of subjects, limited social activities in 25(per cent), and decreased study performance in 8 (per cent) of the affected subjects.

The third objective of the study was to evaluate the effectiveness of muscle stretching exercise on pain during primary dysmenorrhoea.

The mean pre-test primary dysmenorrhoea pain score was 5.72 and post test primary dysmenorrhoea pain was 2.18 and the computed value of 't' was 16.09. So the calculated 't' value was more than table 't' value (2.021) at 49 degree of freedom, therefore the calculated 't' value was significant at 0.05 level. It was statistically proved that muscle stretching exercise was effective to reduce pain during primary dysmenorrhoea.

The mean pre-test primary dysmenorrhoea discomfort score was 67.74 and post test primary dysmenorrhoea discomfort was 45.54 and the computed value of 't' was 14.08.So the calculated 't' value was more than table 't' value(2.021)at 49 degree of freedom, therefore the calculated 't' value was significant at 0.05 level. It was statistically proved that muscle stretching exercise was effective to reduce discomfort during primary dysmenorrhoea.

Shahr-jerdy et al., (2012) conducted a research to assess the effectiveness of muscle stretching exercise on primary dysmenorrhoea. The participants were randomly divided into 2 groups: an experimental group (n = 124) and a control group (n = 55). After muscle stretching

exercise intervention the pain intensity was reduced from 7.65 to 4.88, and primary dysmenorrhoea discomfort was decreased from 7.48 to 3.86($p<0.001$).

Onur et al., (2012) assessed the effect of home-based exercise programme on pain severity and quality of life in women with primary dysmenorrhoea. The sample size was 45. The data collection tools were Physical Activity Questionnaire (IPAQ), visual analogue scale (VAS), and SF-38 health survey. A standardized home-based exercise intervention was instructed for all participants, and the outcome measures were re-collected during three consecutive menstrual cycles. At the end of the study VAS showed a significant reduction ($P<0.001$). So this study concluded home-based exercise intervention is effective to provide a significant improvement for primary dysmenorrhoea.

SOGC Primary Dysmenorrhoea Consensus Guidelines (2005) shows in a review of 4 randomized controlled trials and in 2 observational studies, exercise was effective to reduce primary dysmenorrhoea symptoms. A more recent research pointed out that vigorous exercise (more than 3 times per week) effective to reduce the physical symptoms related to menstruation.

The fourth objective of the study was to associate the level of pain during primary dysmenorrhoea with selected demographic variables.

The chi-square test showed that there was no significant association between the pre-test post test primary dysmenorrhoea pain and discomfort scores with selected demographic variables such as age, year of study, age at menarche, and Body Mass Index.

Weissman et al., (2004) conducted a study to explain the prevalence, course, severity, and predictive factors of primary dysmenorrhoea in women of all reproductive ages. And they did not find any significant association between primary dysmenorrhoea and age at menarche

Chauhan & Kala (2012) found the incidence rate of primary dysmenorrhoea was high in low Body Mass Index (<18.1) group. Therefore by improving the nutritional status of adolescent females may decrease incidence rate of primary dysmenorrhoea.

SUMMARY

Primary dysmenorrhoea is a common health problem of adolescent females. So they need further education regarding the treatment options for primary dysmenorrhoea in order to

decrease the existing health and college limitations caused by primary dysmenorrhoea **(Banikarim et al., 1999)**.Keeping in this view, the researcher aimed to conduct a study to assess the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH college of nursing at Coimbatore.

The objectives of the study were

1. To identify the prevalence of primary dysmenorrhoea among B.Sc Nursing students
2. To assess the degree of pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students.
3. To evaluate the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea.
4. To associate the level of pain and discomfort during primary dysmenorrhoea with selected demographic variables.

Review of literature helped the researcher to collect the relevant information to support the study, to design the methodology and to develop the tools.

The sample size was 50 B.Sc Nursing students. The one group pretest post-test was designed by the investigator to assess the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students.50 B.Sc Nursing students were selected by purposive sampling technique. The research tool was developed and adopted after reviewing the relevant literature. The tools were numerical pain scale for measuring pain and primary dysmenorrhoea rating scale for measuring discomfort of primary dysmenorrhoea.

The collected data was analyzed by descriptive and inferential statistics based on the formulated objectives of the study. The tested and accepted the hypothesis that there is a significant reduction in primary dysmenorrhoea pain and after muscle stretching exercises.

Major findings of the study

1. The total incidence rate of primary dysmenorrhoea among B.Sc Nursing students were 61.25(per cent).It shows the students had dreadful pain and discomfort during primary dysmenorrhoea.

2. According to the pre-test primary dysmenorrhoea pain score more than half (60 per cent) of students had the pain score 6 and above 6. But in the post-test primary dysmenorrhoea pain score only 24 per cent of students had the pain score 4 and above 4

3. According to the pre-test primary dysmenorrhoea discomfort score more than half (78 per cent) of students had the discomfort score 61 and above 61. But in the post-test primary dysmenorrhoea discomfort score only 30 per cent of students had the pain score 49 and above 49.

4. Mean difference of pre-test post-test primary dysmenorrhoea pain score was 3.54.Mean difference of pre-test post-test primary dysmenorrhoea discomfort score was22.2.

5. Mean score of pre-test primary dysmenorrhoea pain was 5.72,mean score of post-test primary dysmenorrhoea pain was 2.18.It shows the subjects had a significant reduction in their pain after muscle stretching exercise intervention.($P<0.05.,t=16.09$)

6. Mean score of pre-test primary dysmenorrhoea discomfort was 67.74,mean score of post-test primary dysmenorrhoea discomfort was 45.54.It shows the subjects had a significant reduction in their discomfort after muscle stretching exercise intervention.($P<0.05.,t=14.08$)

7. There was no association between pre-test post-test primary dysmenorrhoea pain and discomfort scores with selected demographic variables.

CONCLUSION

The following conclusion is made on the light of above findings that most of the students suffer moderate to severe pain and discomfort during menstruation. Muscle stretching exercises are the effective, simple, non-medicinal measure to reduce the pain and discomfort during primary dysmenorrhoea. This research can make an awareness regarding how to manage primary dysmenorrhoea pain and discomfort among Nursing students, College lectures and parents. Muscle stretching exercises are the effective, safe, less time consuming form of therapy for students with primary dysmenorrhoea. It can be implemented into clinical practice and health education in order to increase the quality of life for students with primary dysmenorrhoea.

IMPLICATIONS:

The world around us is growing very fastly. Society has tremendous technological advancement in day to day life practice to managing pain that arise from unsound body mechanism. Although the natural methods of pain control is acceptable and accessible to everyone in this world because the natural methods does not have any side effect. Therefore the health care providers have the responsibility for providing support and comfort to female adolescents during menstruation.

Nursing Practice

- A midwife can practice planned education programme to impart knowledge and skill in management of primary dysmenorrhoea.
- Midwife can teach medicinal, non-medicinal, and conventional practices for managing primary dysmenorrhoea.
- Midwifery nurses can conduct camp for school and college students regarding how to manage primary dysmenorrhoea.
- Understand the importance of muscle stretching exercise for managing primary dysmenorrhoea.
- Encourage the doctors to differentiate the primary dysmenorrhoea from secondary dysmenorrhoea and offer treatment if necessary.

Nursing Education

- This study helps the student nurses to gain more idea regarding how to differentiate primary dysmenorrhoea from secondary dysmenorrhoea.
- The nurse educator can encourage the student nurses to conduct research based on the other complementary therapies for managing primary dysmenorrhoea.
- The nurse educator can encourage the student nurses to conduct research among adolescent girls regarding the prevalence rate and risk of primary dysmenorrhoea.
- Encourage the student nurses to participate in exercise progrmmes for managing primary dysmenorrhoea.
- Nurse educator can encourage the student nurses to educate the health professionals about primary dysmenorrhoea, its severity and its impact on adolescent health.

Nursing Research

- This study gives guidance for further studies to conduct in this area.
- This is important to identify the existing prevalence rate, risk factors, and medicinal, non-medicinal, and complementary therapies of primary dysmenorrhoea.
- The evident from other literatures indicates more research in the area of primary dysmenorrhoea management.

Nursing Administration

- Nurse administrator can plan and organize camp for school and college students regarding the complementary therapies for managing primary dysmenorrhoea.
- Programme for nurse midwives to update their knowledge regarding menstruation related complications of adolescents.
- Local mass media can be used to popularize muscle stretching exercise as a conventional therapy for managing primary dysmenorrhoea.

LIMITATIONS OF THE STUDY

- The study was limited to B.Sc Nursing students of 17-21 years
- The study samples were taken from only one college
- The short term effect of the muscle stretching exercise only assessed

RECOMMENDATIONS

❖ A similar study can be conducted in larger group to generalize the findings.

❖ A long term study to reinforce the effectiveness of muscle stretching exercise can be undertaken.

❖ An extensive descriptive study to assess the knowledge attitude and practice of primary dysmenorrhoea among adolescent girls can be conducted.

❖ A study can be conducted to assess the incidence rate of primary dysmenorrhoea.

❖ A similar study we can conduct to find out the effectiveness of non-medicinal interventions for primary dysmenorrhoea.

- ❖ A similar study we can conduct to find out the effectiveness of conventional therapies for managing primary dysmenorrhoea.
- ❖ A comparative study we can conduct between medicinal and non-medicinal treatment of primary dysmenorrhoea.
- ❖ A similar study can be conducted to know the effectiveness of muscle stretching exercise on pre-menstrual symptoms also.

ABSTRACT

A study to assess the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students in KMCH College of Nursing, Coimbatore. Objectives of the study were as follows, identify the prevalence of primary dysmenorrhoea among B.Sc Nursing students, determine the degree of pain and discomfort during primary dysmenorrhoea among B.Sc Nursing students, evaluate the effectiveness of muscle stretching exercise on pain and discomfort during primary dysmenorrhoea, associate the level of pain and discomfort during primary dysmenorrhoea with selected demographic variables. One group pretest and post test design was adopted. Setting of the study was KMCH College of Nursing, Coimbatore. Sample was 50 B.Sc Nursing students with primary dysmenorrhoea. Sampling technique was Non probability purposive sampling technique was adopted. The model of this study was developed from Titler et al (2004) Effectiveness model. Menstrual pain perception level was measured by using numerical pain scale and primary dysmenorrhoea discomfort was assessed by primary dysmenorrhoea discomfort assessing rating scale. Muscle stretching exercise was given to the subjects five days per week about 30 min, under the supervision of investigator. Result of the study had shown significant effect of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea. This is proved by paired‘t’ test. The paired‘t’ value for pain and exercise was16.09 ($p<0.05$) and the paired‘t’ value for discomfort during primary dysmenorrhoea and exercise was14.08 ($p<0.05$).So it was statistically proved that muscle stretching exercise was effective to reduce pain and discomfort during primary dysmenorrhoea. So this study concluded that muscle stretching exercise is very suitable and practicable therapy of non pharmacological measure for managing pain and discomfort of primary dysmenorrhoea among adolescent girls with primary dysmenorrhoea.

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ONLINE ARTICLE

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APPENDIX A

SECTION-I

BASELINE DATA (DEMOGRAPHIC DATA)

1. Age in years…….
2. Year of study:……..
3. Age at menarche:…….
4. Body weight:……...
5. Height:…….
6. Body Mass Index:……
7. Last menstrual period:……..

SECTION – II

PRIMARY DYSMENORRHOEA SCREENING QUESTIONNAIRE

Note:

- Please read the questions carefully and try to rate (√)each statement on its own
- Please answer all the questions

Problems	Frequently	2-3 Times	1-2 Times	Never
1. My menstrual cycle is regular for every month.				
2. I feel pain in the lower abdomen during menstruation.				
3. I have pain in the lower back during menstruation.				
4. I have headache during menstruation.				
5. I am experiencing vomiting during menstruation.				
6. I have either constipation or diarrhea during my menstruation.				
7. I am emotionally disturbed during menstruation.				
8. I face the problem during each cycle.				
9. The problem is severe that does not allow me to attend the class.				
10. I take tablet during menstruation.				

SECTION - III

PRIMARY DYSMENORRHOEA DISCOMFORT ASSESSING RATING SCALE

Instruction: Please tick about the discomforts which have taken place during your present and last menstrual period .Even if the discomforts did not last throughout the entire menstrual period. Please read the questions carefully and try to rate (√) each statement on its own. Please answer all the questions

Sample no:…….

SL.NO	ITEMS	FREQUENTLY	1-3 TIMES	NEVER
1	I feel headache during menstruation.			
2	I have joint pain during menstruation.			
3	I feel faintness during menstruation.			
4	I experience decreased energy during menstruation.			
5	I feel dizziness during menstruation.			
6	I have the experience of edema formation over the body during menstruation.			
7	I experience painful breasts during menstruation.			
8	I experience hot flashes during menstruation.			
9	I have anorexia during menstruation			

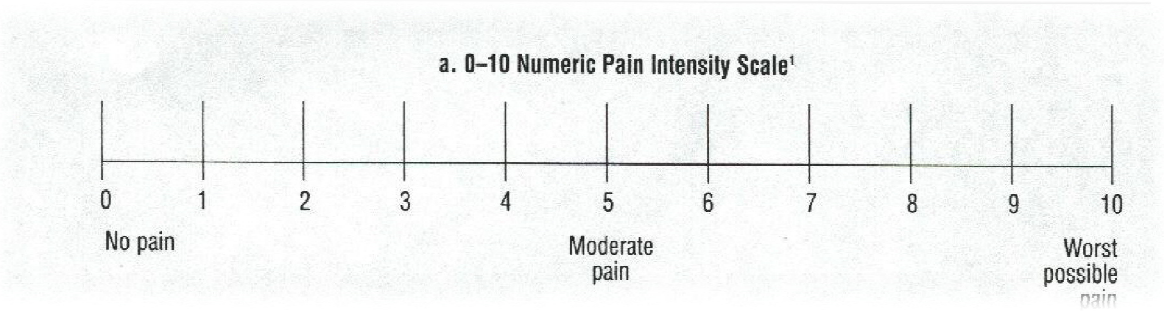
10	I have more hungry during menstruation.			
11	I have diarrhoea during menstruation.			
12	Frequently I feel like passing urine during menstruation.			
13	I experience nausea during menstruation.			
14	I experience vomiting during menstruation.			
15	I feel fuzzy vision during menstruation.			
16	I have constipation during my menses.			
17	I roll over the bed during menstruation.			
18	I feel mood swings during menstruation.			
19	I feel suffocation during menstruation.			
20	I feel ringing in the ears during menstruation.			
21	I experience insomnia during menstruation.			

22	I experience chest pain during menstruation.			
23	I have the experience of weight gain during menstruation.			
24	I feel more tension during menstruation**.**			
25	I experience skin disorders during menstruation.			
26	I feel more anxiety during menstruation.			
27	I feel more confusion during menstruation.			
28	I do not feel like talking during menstruation.			
29	I simple sit at home during my menstruation.			
30	I experience lowered motor coordination during menstruation.			
31	I feel depression during menstruation.			
32	I cry or weep during my menstruation.			
33	I feel restless during menstruation.			

34	I experience difficult in concentrating during the menstruation.			
35	I feel muscle stiffness during menstruation.			
36	I feel abdominal cramps during menstruation.			

SECTION – IV

0-10 Numerical Pain Intensity Scale



0 – No pain

1-2 Mild Pain

3-4 Moderate Pain

5-6 Severe Pain

7-8 Very Severe Pain

9-10 Worst Possible Pain

APPENDIX – B

PERMISSION LETTERS FOR CONDUCTING THE STUDY

K M C H COLLEGE OF NURSING
(Recognised by the Government of Tamil Nadu & Indian Nursing Council New Delhi)
Affiliated to the Tamil Nadu Dr. MGR. Medical University, Chennai
K.M.C.H. Campus, Avanashi Road, Coimbatore - 641 014. INDIA
Ph : (0422) 4323740, 4323721 Telefax : (0422) 2627525 E-mail : info@kmch.ac.in Website : www.kmch.ac.in

Ref : KMCT/2956/09/13

September 3rd ,2013

To

Dr. Jeyanthi Veerappan., M.D., DGO.,
Consultant Obstetrician & Gynaecologist,
Kovai Medical Center and Hospital,
Coimbatore – 14

Dear Madam

Greetings to you.

I submit that one of our M.Sc(N) final year students by name Ms. Christy Kurian Specializing in Obstetrics & Gynecological Nursing in our college desires to conduct a study Titled "**A Study to assess the effectiveness muscles stretching exercise on pain and discomfort during primary dysmenorrhoea among B.Sc(N) Students in KMCH College of Nursing Coimbatore**" As a part of her M.Sc (N) curriculum.

As she is in need of Medical Expert to complete the study, I request you to guide the student.

Thanking you,

Yours Truly,

Prof. DR. S. Madhavi, M.Sc(N)., Ph.D.,
Principal.

The Principal,
K.M.C.H. College of Nursing,
P.B. No : 3209, Avanashi Road,
Coimbatore - 641 014.

KMCH COLLEGE OF NURSING * COIMBATORE-641014

V. Jayanthi
Dr Jayanthi Veerappan,
M D.,D.G.O.
Reg No: 31466

Administrative Office :
Kovai Medical Center Research & Educational Trust
K.M.C.H. Campus, Avanashi Road, Coimbatore - 641 014.
Ph : (0422) 4323721, Telefax : (0422) 2627196 E-mail : info@kmch.ac.in Website : www.kmch.ac.in

Letter requesting permission to conduct the research study

From,

Christy kurian,

II year M.Sc Nursing,

K M C H College Of Nursing,

Coimbatore – 14.

To,

The Principal,

K M C H College Of Nursing,

Coimbatore – 14.

Respected madam,

I have selected the below mentioned topic for my dissertation to be submitted to the Dr.M.G.R Medical University, Chennai as a requirement for the award of Master's Degree in nursing.

Topic: A study to assess the effectiveness of muscle stretching exercises on pain and discomfort during primary dysmenorrhoea among B.Sc nursing students in K M C H college of nursing at Coimbatore.

I am interested in conducting this study on B.Sc nursing students of our esteemed institution. I assure that this study will not cause any inconvenience to the normal routine of the institution.

Kindly permit me to conduct the proposed study and do the needful

Thanking you,

Yours truly,

CHRISTY KURIAN

Place: COIMBATORE

Date: 3.09.2013

The Principal,
K.M.C.H. College of Nursing,
P.B. No : 3209, Avanashi Road,
Coimbatore - 641 014.

APPENDIX – C

REQUISITION FOR CONTENT VALIDITY OF THE TOOL

From,

Ms. Christy Kurian,

II Year M.Sc(N),

KMCH College of Nursing,

Coimbatore – 14.

To,

Mrs.S.P.Latha, M.Sc(N).,

Principal,

RVS College of Nursing,

Kannampalayam,

Coimbatore.

Through,

The Principal,

KMCH College of Nursing,

Coimbatore – 14.

Respected Madam,

Sub: Seeking expert opinion and content validity regarding

I ,Ms. Christy Kurian, II Year M.Sc(N), student of KMCH College of Nursing, wish to undertake a study titled, "**A Study To Assess The Effectiveness Of Muscle Stretching Exercises On Pain And Discomfort During Primary Dysmenorrhoea Among B.Sc Nursing Students In KMCH College Of Nursing At Coimbatore**". As it is a part of partial fulfillment of my post graduate programme, it will be of immense help if you could peruse the proposal and research tool. Here with I am enclosing the copy of the same. Kindly do the needful.

Thanking You

Place: Coimbatore

Date: 2.09.2013

Yours Faithfully,

C. Kurian 2.09.13

Christy Kurian

The Principal,
K.M.C.H. College of Nursing,
P.B. No : 3209, Avanashi Road
Coimbatore - 641 014.

APPENDIX- D

CERTIFICATION OF CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted by Ms.Christy Kurian, "A STUDY TO ASSESS THE EFFECTIVENESS OF MUSCLE STRETCHING EXERCISES ON PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA AMONG B.Sc NURSING STUDENTS IN KMCH COLLEGE OF NURSING AT COIMBATORE". I found that the methodology and tools are appropriate.

Place: Coimbatore

Date: 30/09/13

R.V.S. COLLEGE OF NURSING CBE-641402.

Signature and Seal

30/09/13

PRINCIPAL
R.V.S. COLLEGE OF NURSING
KANNAMPALAYAM
TRICHY ROAD, SULUR
COIMBATORE - 641 402

CERTIFICATIN OF CONTENT VALIDITY

This is to certify that I have perused the research proposal submitted Ms. Christy Kurian, "A STUDY TO ASSESS THE EFFECTIVENESS OF MUSCLE STRETCHING EXERCISES ON PAIN AND DISCOMFORT DURING PRIMARY DYSMENORRHOEA AMONG B.Sc NURSING STUDENTS IN KMCH COLLEGE OF NUSING AT COIMBATORE".I found that the methodology and tools are appropriate.

Place: Coimbatore.

Date: 31/1/2014.

V Jayanthi

Signature & Seal

Dr Jayanthi Veerappan
M.D.(.
Reg No: 31466

APPENDIX – E

LIST OF EXPERTS

1. **Dr. Jayanthi Veerappan M.D.,D.G.O.,**
   Consultant Obstetrician and Gynaecologist,
   Kovai Medical Center and Hospital,
   Coimbatore – 641 014

2. **Prof. S. P Latha, M.Sc(N)**
   Principal,
   R V S College If Nursing,
   Trichy Road, Kannaampalayam,
   Coimbatore.

3. **Prof. Mrs. S. Renuka, M.Sc(N)**
   Head of the Department of
   Obstetrics & Gynaecological Nursing
   KMCH College Of Nursing
   Coimbatore – 641 014

4. **Mrs. P. Padma, M.Sc(N)**
   Associate Professor
   OBG department
   KMCH College Of Nursing
   Coimbatore - 641 014.